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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,020	08/04/2003	Zhenning Cao	12004	5810

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BATTELLE MEMORIAL INSTITUTE  
505 KING AVENUE  
COLUMBUS, OH 43201-2693

EXAMINER
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TRAN, LEN

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/634,020

Applicant(s)

CAO ET AL.

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7, 24 and 27 is/are allowed.
- 6) ☒ Claim(s) 8-23, 25, 26 and 28-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8-23, 25-26 and 28-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al (US 6,130,399), and further in view of Applicant's admitted prior art (pages 13 and 14, figures 2 and 3).

As to claims 8-11, 14-16, 19-21, 25, 26, 28-34, Lu et al discloses a composite resistance spot welding electrode comprising a shank, a tip portion with the shank portion, the tip portion comprising a co-axial annular outer sleeve, the sleeve having an end co-terminus with a tip

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portion end distal to the shank portion, the tip portion end and the sleeve end cooperating to form a smooth, continuous tip face (figures and col. 5, lines 13-24).

Lu et al fail to teach, wherein the sleeve has a thickness in the radial direction of about 10-30% of the outside radius of the sleeve, wherein the sleeve is formed from stainless steel. The annular sleeve has a thickness in the radial direction of about 5-15% of the outside diameter of the sleeve. The diameter of the insert is no more than about 50% of the diameter of the tip.

Applicant's admitted prior art discloses on pages 13 and 14, wherein the sleeve has a thickness in the radial direction of about 10-30% of the outside radius of the sleeve, wherein the sleeve is formed from stainless steel. The annular sleeve has a thickness in the radial direction of about 5-15% of the outside diameter of the sleeve. The diameter of the insert is no more than about 50% of the diameter of the tip. Applicant's admitted prior art disclose the above differences for the purpose of creating a uniform nugget.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have the above dimensions taught by applicant's admitted prior art, in Lu et al in order to create a uniform nugget.

As to claims 12-13, 17-18, 22-23, Applicant's admitted prior art's apparatus is capable of having the electrodes compress between 700-2000 pounds-force, 60-Hz current of about 20-30 KA for 10 cycles, a nugget to be formed with a thickness of between 0.8-3.4 mm and a diameter between 2-6mm.

***Allowable Subject Matter***

1. Claims 1-7, 24, and 27 are allowed.

The prior arts of record fails to teach a combination of a) a shank portion; (b) a transition portion comprising: integral with the shank portion, the transition portion (i) an annular groove co-axial with the transition portion; and (ii) a co-axial neck ring contained within the annular groove; and (c) a tip portion integral with the transition portion, the tip portion comprising:

(i) a co-axial cavity having an opening to a tip portion end distal to the transition portion;  
(ii) an insert contained within the cavity, the insert having an end co-terminus with the distal tip portion end; and

(iii) a co-axial annular outer sleeve, the sleeve having an end co-terminus with the distal tip portion end, the tip portion end, the insert, and the sleeve end cooperating to form a flat face; wherein

(d) the insert comprises no more than about 40 percent of the area of the face; and  
(e) the sleeve has a thickness in the radial direction of about 10-20 percent of the radius of the face.

***Inquiry***

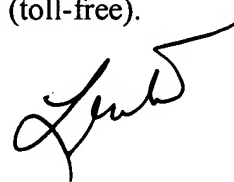
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran  
Examiner  
Art Unit 1725



September 5, 2005